IN THE CLAIMS:

Please cancel claims 6 and 13 without prejudice or disclaimer as to the subject matter thereof.

1. (currently amended) A system for collecting hemodynamic data from a patient and utilizing said data to optimize a cardiac pacing regimen for said patient, comprising:

a means for collecting hemodynamic data of a patient during periods of rest and periods wherein said patient is performing the activities of daily living and for storing said collected hemodynamic data wherein said hemodynamic data consists of a lowest estimated pulmonary artery diastolic pressure (ePAD) value;

a means for monitoring and/or stimulating cardiac tissue of a patient to one of provide a desired cardiac rhythm and restore athe desired cardiac rhythm; and

a means for utilizing ~~integrating at least a portion of~~ the collected lowest ePAD value ~~hemodynamic data~~ with the means for monitoring and/or stimulating cardiac tissue to optimize an atrio-ventricular (AV) pacing interval for ~~one or more hemodynamic characteristics of~~ said patient.

2. (currently amended) A system according to claim 1, wherein the means for collecting the lowest ePAD value~~hemodynamic data~~ comprises one of the following transducers, each of which provides an output signal directly or indirectly indicative of at least one hemodynamic metric of the patient:

an absolute pressure sensor adapted to be fluidly coupled to a cardiac chamber of the patient, an absolute pressure sensor adapted to be fluidly coupled to a pulmonary artery of a patient, an absolute or a differential pressure sensor adapted to be fluidly coupled to a portion of the vasculature of a patient.

3. (original) A system according to claims 1, wherein the means for monitoring and/or stimulating comprises a one of the following:

a pulse generator, a implantable pacemaker, an implantable cardioverter defibrillator, a muscle stimulation apparatus, an external pacemaker.

4. (currently amended) A system according to claim 3, wherein the means for collecting the lowest ePAD value~~hemodynamic data~~ comprises one of the following:

an absolute pressure sensor adapted to be fluidly coupled to a cardiac chamber of the patient, an absolute pressure sensor adapted to be fluidly coupled to a pulmonary artery of a patient, a differential pressure sensor adapted to be fluidly coupled to a portion of the vasculature of a patient, an implantable absolute pressure sensor coupled to an external reference pressure signal; and

wherein an activity-level measurement means is optionally coupled to said patient and an output signal of said activity-level measurement means is time-synchronized to the means for collecting hemodynamic data and said activity-level measurement means is derived from an accelerometer transducer or a piezoelectric crystal transducer.

5. (currently amended) A method of optimizing the hemodynamics of a patient having an implantable cardiac rhythm stimulation and monitoring device, comprising the steps of:

collecting hemodynamic data from said patient, during a period of time when a heart rate of the patient is elevated above a resting rate due to activity by said patient, with a hemodynamic monitor adapted to be disposed in fluid contact with a volume of venous blood of said patient, wherein the hemodynamic data consists of the lowest estimated pulmonary artery diastolic pressure (ePAD) value;

storing said lowest ePAD value~~hemodynamic data~~ in a computer readable memory medium;

collecting cardiac event data from the patient;

storing the cardiac event data in a computer readable memory medium;

analyzing said lowest ePAD value ~~hemodynamic data~~ in conjunction with said cardiac event data to determine an atrio-ventricular (AV) delay interval ~~cardiac stimulation sequence intended~~ to optimize the hemodynamics of said patient; and

providing said AV delay interval~~cardiac stimulation sequence~~ to an implantable cardiac rhythm stimulation and/or monitoring device as an operating AV delay interval for chronic delivery of cardiac pacing therapy.

6. (canceled)

7. (currently amended) A method according to claim 5 ~~or claim 6~~, wherein the lowest ePAD value~~hemodynamic data~~ is collected substantially continuously, periodically, at a pre-determined time of day, at a pre-determined interval, while the patient is at rest, while the patient is performing typical daily activities for said patient, while the patient is strenuously exercising, and/or while the patient is exercising mildly.

8. (currently amended) A method according to claim 5 or claim 7, wherein during the providing step at least one of the following parameters comprises a part of the cardiac stimulation sequence: ~~an A-V interval,~~ a sensed-AV interval, a paced-AV interval~~, a V-V interval, a V-A interval, a heart rate~~.

9. (original) A method according to claim 5 or claim 8, wherein the implantable cardiac rhythm stimulation and/or monitoring device comprises a bi-ventricular device.

10. (original) A method according to claim 9, wherein said implantable cardiac rhythm stimulation and/or monitoring device is programmed to at least one of the following pacing mode(s): a dual chamber pacing mode, a ventricular pacing

regime; a dual chamber sensing regime; a trigger, null and/or inhibit delay response regime (in response to a sensed cardiac event); or a rate-responsive variant thereof.

11. (original) A method according to claim 5, claim 7 or claim 9, wherein the hemodynamic data is collected using at least one of the following data collection models:

for a set of different A-V intervals during pacing at a common heart rate,

for a first set of different heart rates using a common A-V interval, or

for a second set of different heart rates constrained in a predetermined range for a preselected period of time.

12. (currently amended) A method according to claim 11, wherein, as applicable:

the set of different A-V delay intervals comprises a range of between of about 80 ms and about 350 ms;

the first set of different heart rates is between about 40 bpm and about 180 bpm;

the second set of different heart rates is between about 40 bpm and 180 bpm; and

the preselected period of time is between a few minutes and several days.

13. (canceled)

14. (currently amended) A computer readable medium for performing a method for optimizing hemodynamics of a patient using hemodynamic data collected from said patient, comprising:

instructions for collecting hemodynamic data from said patient, during a period of time when a heart rate of the patient is elevated above a resting rate due to activity by said patient, with a hemodynamic monitor adapted to be disposed in fluid contact with a volume of venous blood of said patient, wherein the hemodynamic data consists of a lowest estimated pulmonary artery diastolic pressure (ePAD) value;

instructions for storing said lowest ePAD value~~hemodynamic data~~ in a computer readable memory medium;

instructions for collecting cardiac event data from the patient;

instructions for storing the cardiac event data in a computer readable memory medium;

instructions for implementing said lowest ePAD value~~analyzing said hemodynamic data~~ in conjunction with said cardiac event data to determine a cardiac stimulation sequence intended to optimize the hemodynamics of said patient, wherein the cardiac stimulation sequence consists of an atrio-ventricular (AV) delay interval; and

instructions for chronically delivering a cardiac pacing therapy utilizing said AV delay interval via ~~providing said cardiac stimulation sequence to~~ an implantable cardiac rhythm stimulation ~~and/or monitoring~~ device.